

# Ray-Based Image System

Masayuki Tanimoto

[tanimoto@nuee.nagoya-u.ac.jp](mailto:tanimoto@nuee.nagoya-u.ac.jp)

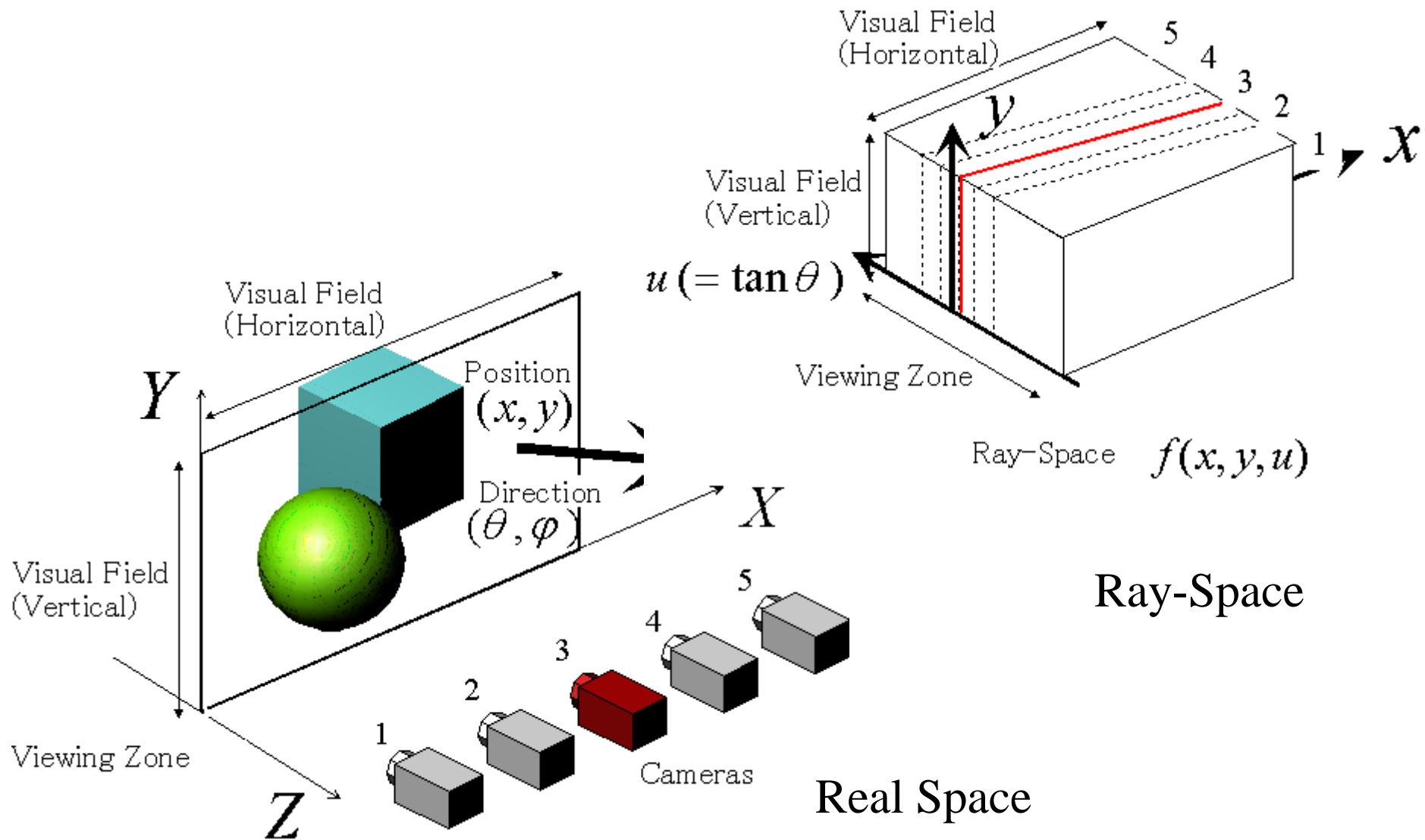
Graduate School of Engineering  
Nagoya University, Japan

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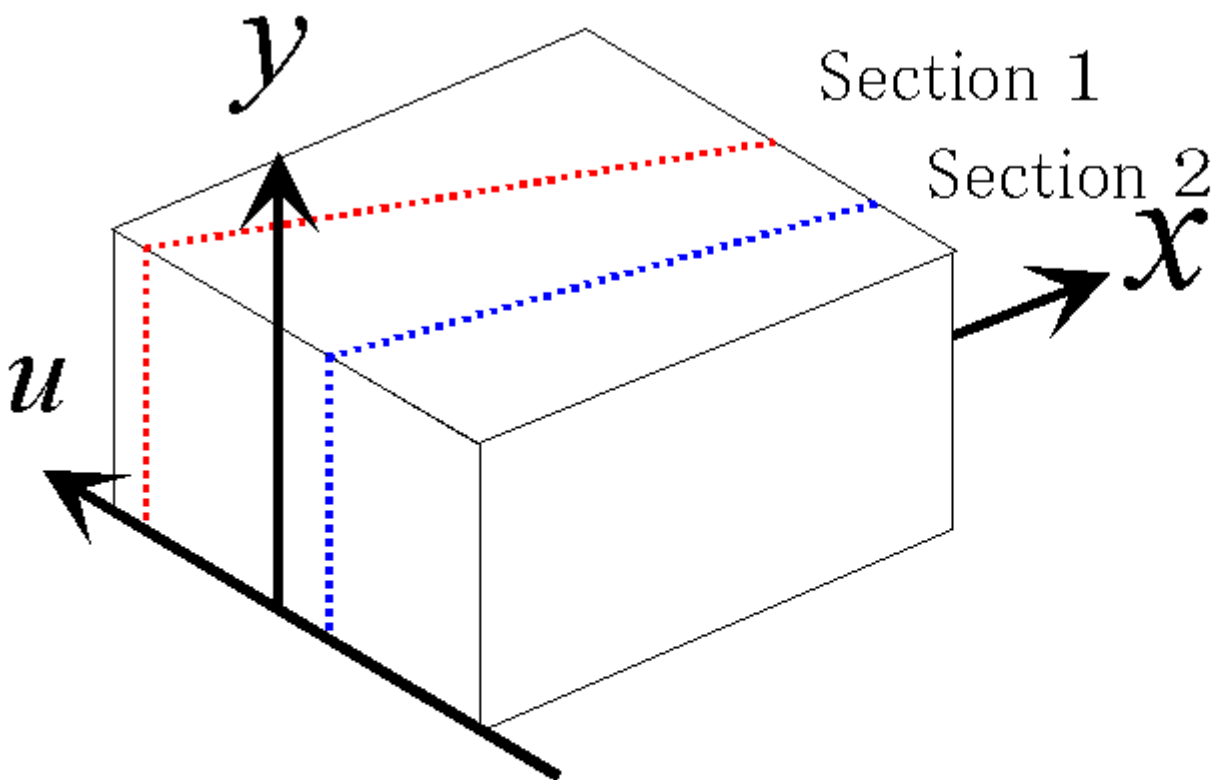
# FTV (Free viewpoint TV) System



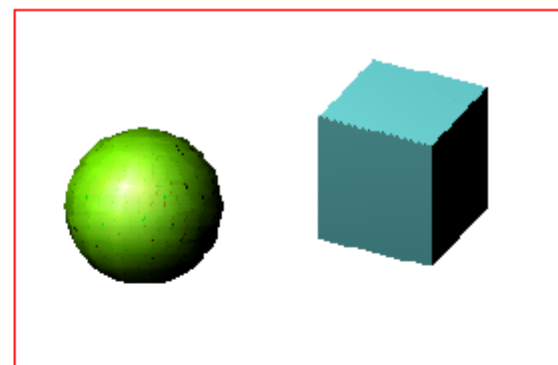
# Acquisition of FTV Signal



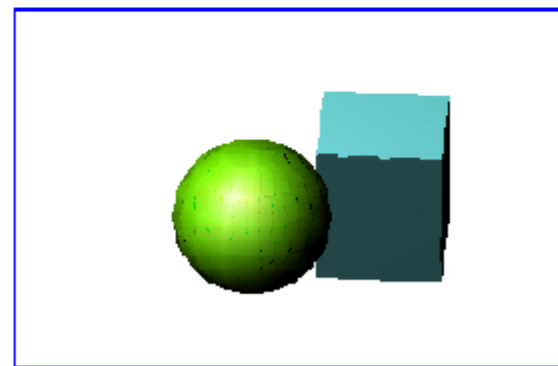
# Generation of View Images



Ray-Space  $f(x, y, u)$



Section Image 1



Section Image 2

# FTV Demo: Aquarium

## Original Camera Views (15 Cameras)

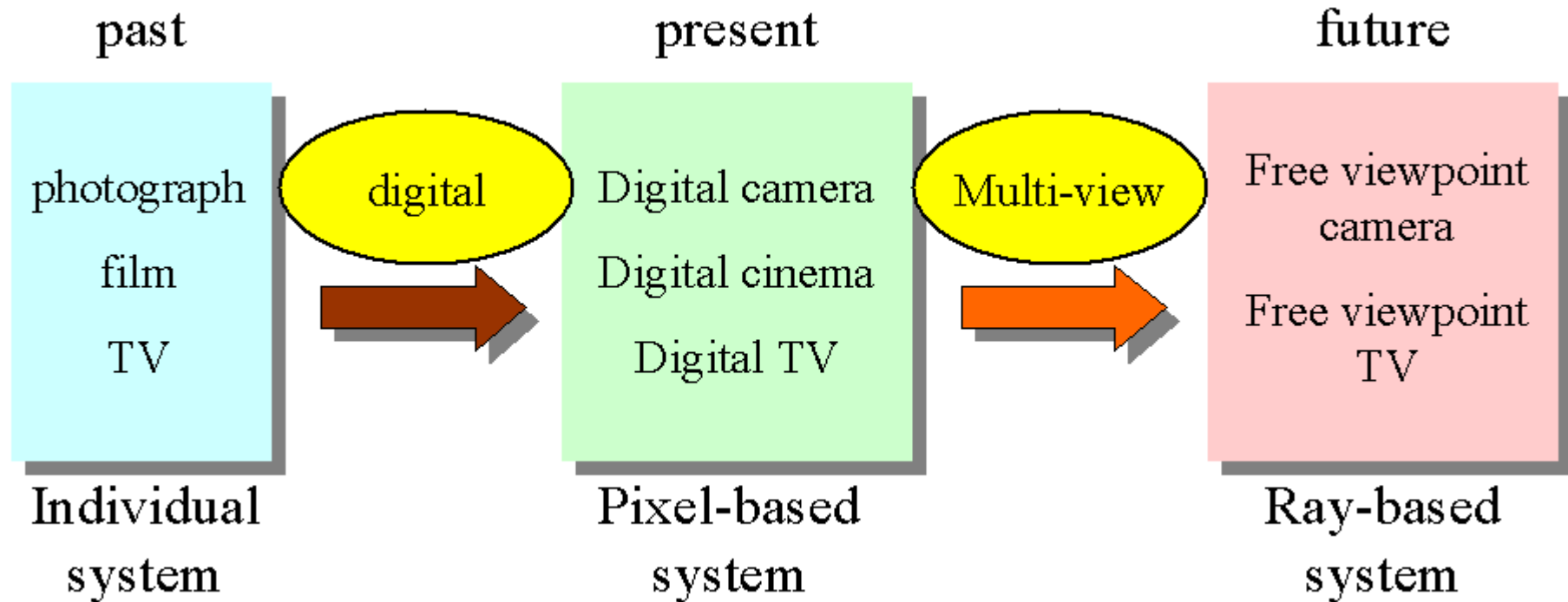


# FTV Demo: Aquarium

## Generated Free Views



# Evolution of Image System



# Key Technologies of Ray-Based System

## Ray capturing

- Multi-camera
- Mirror-scan

## Ray processing

- CPU
- Storage

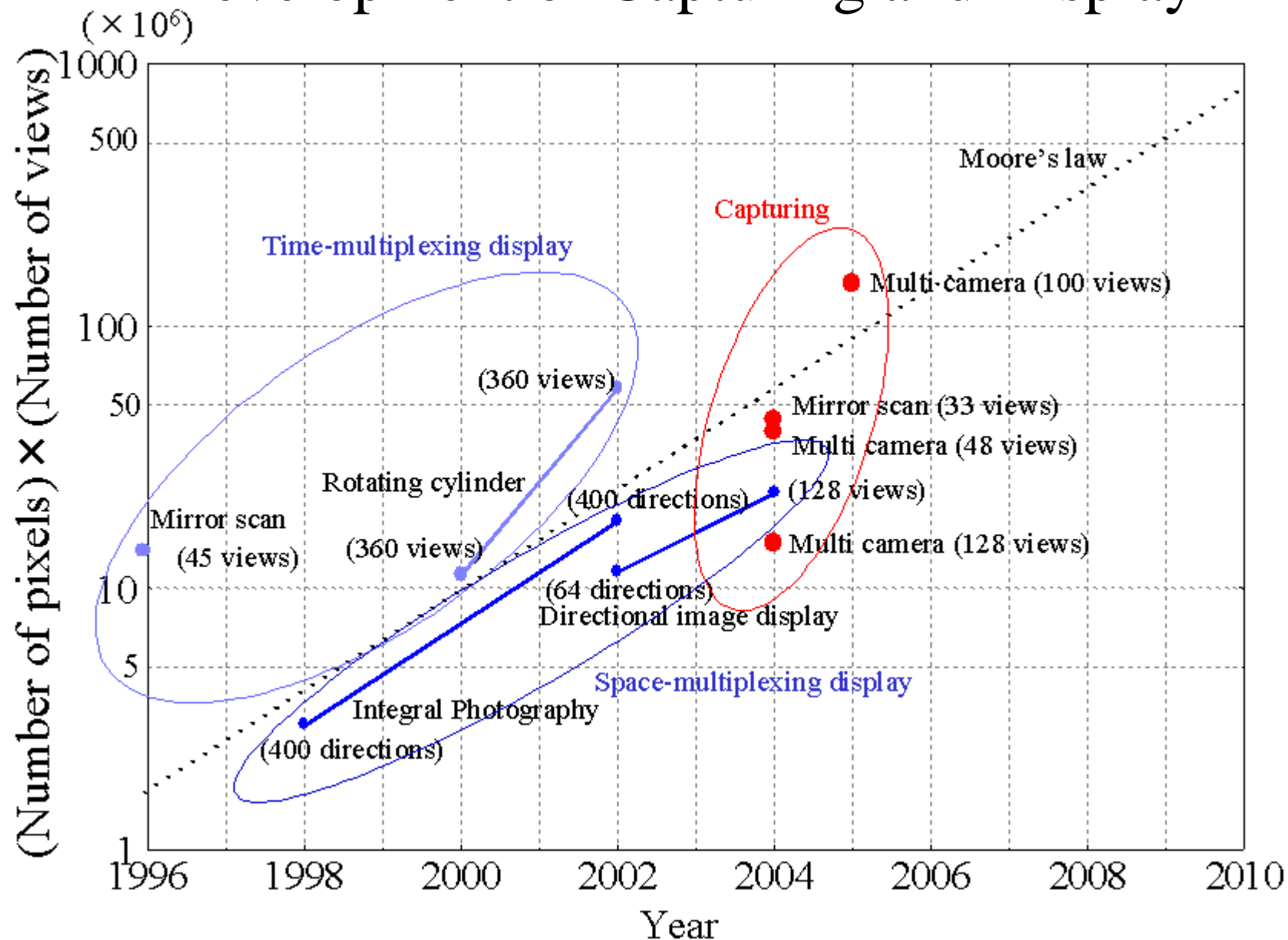
## Ray display

- Time-multiplexing
- Space-multiplexing

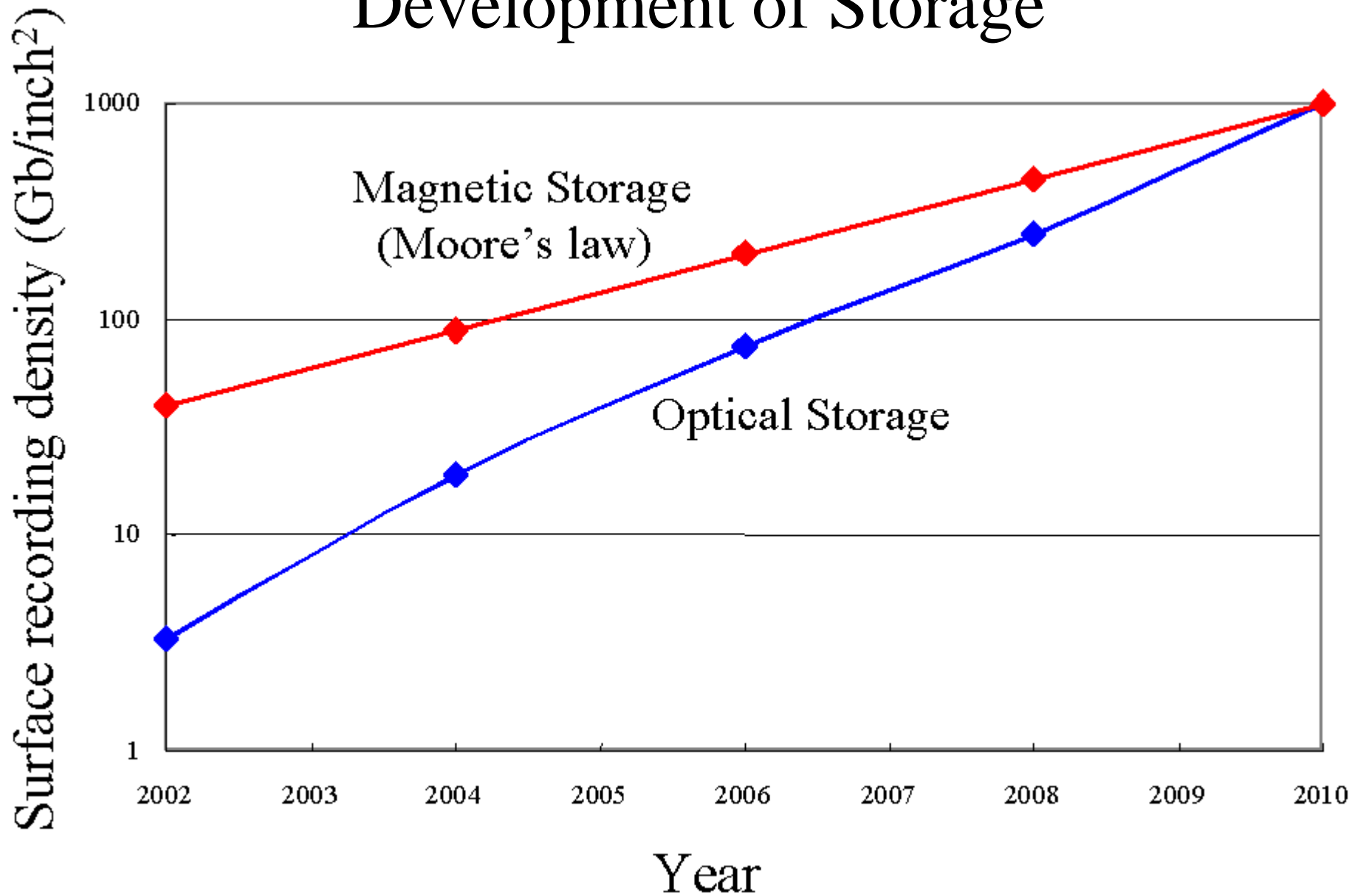




# Development of Capturing and Display



# Development of Storage



# Multi-Camera Ray Capturing System



Linear alignment of 100 cameras



captured scene

# Multi-Camera Ray Capturing System



Semicircular alignment of 100 cameras



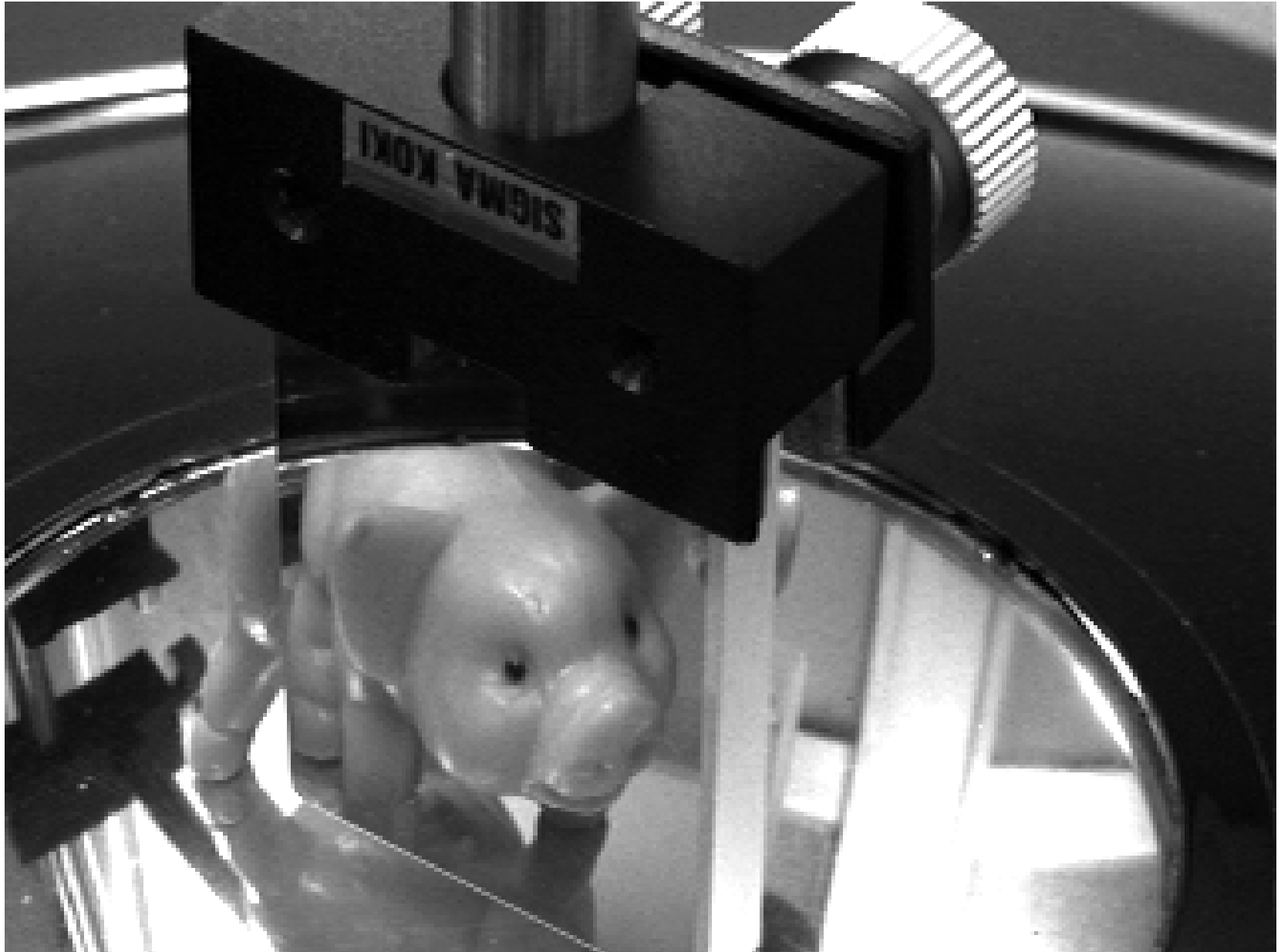
captured scene



# Mirror-Scan Ray Capturing System



# Capturing Process



# Ray Reproducing Display: The SeeLinder



# FTV Demo: Real-Time FTV on PC



# Conclusions

- We realized FTV where rays are processed in the ray space.
- Image systems will shift from pixel-based to ray-based.
- There already exist all technologies of ray capturing, processing and display and they are developing rapidly.